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partments. Such compartments are best fumigated by means of small, independent gas generators of various kinds. It happens not infrequently in the fumigation of vessels that the use of sulphur gas is best adapted to some compartments, which are rendered air-tight with difficulty, while flue gas is best adapted to the holds of the vessels, provided, of course, they can be made air-tight.

The Public Health Service is now experimenting with the use of hydrocyanic-acid gas in the eradication of rats from loosely crated fruits and vegetables.

Dr. Roberts suggests that the flue gases adapted by the Harker system could be used in destroying rats in sewers. Here, however, account must be taken of the possibility of the gas finding its way in sufficient concentration into cellars and other places where human beings might be accidentally suffocated.

It may be stated that the use of flue gas for the fumigation of vessels for the destruction of animal life has a distinct place in maritime quarantine practice, and it only remains for the investigators to improve upon the methods of handling the gas, and also to devise a fuel the gases from which will kill insects. There is still another important consideration, and that is the part which marine architects may play in aiding sanitarians by eliminating in their plans of construction, as far as possible, all spaces and runways which would enable rodents and insects to escape the gaseous fumes which are intended for their destruction.

EPIDEMIC CEREBROSPINAL MENINGITIS.

INFORMATION RELATIVE TO THE PREVENTION OF ITS SPREAD AND THE MANAGEMENT OF CASES.

By R. H. VON EZDORF, Surgeon, United States Public Health Service.

On the appearance of epidemic cerebrospinal meningitis in a community the following measures will be found to be practicable of enforcement when modified to suit local conditions:

1. Prompt and early report of cases.

Local health authorities should adopt and enforce an ordinance requiring the immediate report of any case or suspected case of cerebrospinal meningitis by physicians, or heads of families, to the local health authorities.

A certificate, signed by such person, stating name of disease, the name, age, sex, and color of the patient suffering therefrom; and setting forth by street and number, or by other sufficient designation, the location of the house, room, or other place in which said patient can be found, should be required.

When said patient recovers or dies immediate notice should be sent to the local health authority.

2. Special records to be kept.

Health departments will find it useful to keep special records of all cases reported, so as to follow the progress of the disease.

These records should contain: Serial number; date case reported; name; age; sex; color; address; date when taken sick; confirmed or not confirmed; number of persons in family or house; result, giving date of recovery or death; remarks, giving notes if treated in hospital; with or without serum, etc.

3. Placard and quarantine of the house.

A large placard giving the name of the disease and warning the public against entrance into the house should be placed in a conspicuous place. The removal of such placard, except by order of the health department, should be prohibited.

4. Establish an isolation hospital for the care and treatment with specific serum of cerebrospinal meningitis cases only.

The establishment of an isolation hospital will afford the patients the best conditions and make for the best possible chances for their recovery.

This hospital should be open to all persons alike and should be free.

The mortality from this disease still remains high but has been greatly reduced by early and prompt treatment with the specific serum.

With the proper use of serum there have been noted a larger proportion of recoveries, a shorter and less severe course of the disease, and fewer complications and sequelæ.

No single measure will bring greater relief to an afflicted community during the prevalence of an epidemic than a properly equipped hospital with a trained corps of nurses and physicians.

5. Isolation of patients at their homes.

When patients are treated at their homes, it should be required that isolation of the cases be enforced by having such cases placed in a well ventilated and lighted room, cleared of all unnecessary furnishings.

Trained nurses should assist physicians to prepare patients and instruments for lumbar puncture and in treatment with serum.

Members of families should be instructed in precautions to be observed to restrict communication.

6. Dispensaries may be established where persons who have been exposed to the disease may come for observation.

At these dispensaries those who have come in contact with the sick or have been otherwise exposed to the disease may come for examination daily or oftener if desired. The conditions in their noses and throats can be kept under observation and, if indicated, attention can be given to the keeping of their noses and throats clean by the spraying or application otherwise of cleansing solutions. Among the solu-

tions that have been used for this purpose may be mentioned Dobell's solution and solutions of 1 per cent of common table salt in water.

7. Supply of specific serum.

Boards of health will find it advantageous to get an ample supply of serum on hand for use as needed. Where a hospital has been established, patients should be induced to enter the hospital for treatment.

8. Provide a medical-inspection service or board of diagnosis.

The members of this board will often be called upon by those who, for economic reasons, seldom call in a physician when sickness occurs in their families.

Reported suspicious cases should be seen by one or more members of the board on request of the attending physician, which service should be without charge.

The responsibility of transfer of such a case to the hospital would thereby rest with the representative of the board of health.

9. Discourage large public gatherings.

Adults are not infrequently attacked by this disease. While the disease is regarded as being proportionately more frequent among children, the epidemics which occurred in Texas and other places have shown that adults are, at the beginning of the epidemic, attacked as frequently as children. Toward the latter part of these epidemics the proportion became greater among children.

The colored race is proportionately more frequently attacked than the white.

Where epidemics have occurred the disease usually made its appearance first during the months of October, November, or December.

Public gatherings should therefore be avoided, particularly at the height of an epidemic or prospect of an epidemic.

10. Closing of schools, moving-picture shows, theaters, churches, etc.

The question of the advisability of closing schools is one of the first that confronts health authorities.

Where modern school buildings are in use, it does not seem advisable nor necessary to adopt this measure. Such schools afford the best sanitary surroundings, and teachers can instruct children regarding personal hygiene and the precautions to be taken. Circulars setting forth the measures which should be followed may be distributed to the children and explained.

If a school child is attacked, children in the same classroom should be inspected by a medical inspector, and those suffering with a nasal catarrh, sore throat, or cough should be sent home for treatment.

No child from a house where a case of the disease is under treatment should be allowed to attend school.

No child who has recovered from the disease should be allowed to return to school until shown not to be a carrier, or until such child

has received proper treatment by spraying of the nose and throat for a period of 7 to 10 days.

It is hardly necessary to close churches, particularly where persons attending will observe general instructions.

Theaters and moving-picture shows should be closed during an epidemic, and children should be kept at home when not attending school.

11. Crowding on street cars should be prohibited or avoided.

Notices should be placed advising persons riding on street cars not to expectorate on floors, and to avoid coughing, sneezing, talking, which might cause a spraying of secretions from the mouth or nose to persons in close contact. Handkerchiefs or other means should be used to guard against this.

12. Laboratory should be established.

A laboratory should be established where spinal fluids may be examined to determine the presence of the meningococci for confirmation of the diagnosis, and for the examination of spinal fluids of patients under treatment, since the presence of the meningococci in such fluids is an indication for further serum treatment. This service should be made available to all physicians.

A bacteriological examination of the secretions taken from the nose and throat of persons, particularly school children who have recovered from the disease, to determine if they are carriers of the meningococcus, might be required. On proving negative after two or more examinations such persons may be safely released from further detention or quarantine.

13. General quarantine not necessary.

A general quarantine in this disease gives a false sense of security. It has been tried and has failed. It is not advisable owing to the fact that the spread of this disease does not follow the epidemiological characteristics of other infectious diseases.

Many healthy persons become carriers of this organism, the meningococcus. By the time an epidemic occurs carriers have become widespread, and are found beyond the boundaries of a single county, so that quarantine will not and can not accomplish the effect desired by adopting such a measure.

Localities in close communication with an infected place will often escape an outbreak of the disease. The reason and conditions for this are unknown.

Local authorities of near-by points having frequent communication with places where the disease has become epidemic will find it practical, as a substitute for quarantine, to advise recent arrivals to use sprays for nose and throat and mouth washes of antiseptic solutions during the period of a week or 10 days, for the purpose of protecting themselves as well as those with whom they may come into intimate contact.

14. Disinfection.

The meningococcus has not been found outside the human body. Moreover, it has a very low resistance and will not withstand drying or sunlight. Even in spinal fluids taken from patients the germ will lose its viability in 24 hours. Disinfection may therefore be limited. All sputum, nasal secretions from the sick, or from other persons in contact with the sick, should be disinfected, as may also articles in the sick room.

Free ventilation of rooms and exposure to sunlight should be insured.

It is needless to say that freight should not be subjected to disinfection or restriction.

15. Funerals.

On account of contact with possible carriers among the family no public funeral of any person who has died of cerebrospinal meningitis should be held.

16. Circular letter of instruction.

The following form for a circular of instruction is suggested:

INFORMATION REGARDING PREVENTION OF MENINGITIS.

1. The germ which causes epidemic cerebrospinal meningitis has been found only in the human body.

2. Healthy persons may carry the germ in their nose and throat without ever developing the disease. Such persons are known as carriers. There are about 10 carriers to every case of meningitis in an infected locality.

3. The measures for lessening the spread of the germs of this disease are as follows:

(a) The nose and throat should be kept clean. For this purpose cleansing sprays may be used.

(b) Careful attention to personal hygiene, mainly cleanliness. Avoid chilling of the body and other depressing influences. Dress to meet the changes in weather.

(c) Avoid close contact with persons. Healthy persons who are carriers may innocently transmit the germs, which may be in their nose and throat, by coughing, sneezing, kissing, talking, etc.

(d) Children should not use articles which may have come in contact with the mouths of others, such as pencils, particles of food, drinking cups, handkerchiefs, and the like.

(e) Cleanliness of premises and free ventilation of houses are necessary. The germ of this disease is easily killed when exposed to drying and sunlight. Hence it is important to thoroughly ventilate and expose to sunlight all occupied rooms.

(f) The disease is not carried by clothing, merchandise, etc.

(g) Persons suffering with "colds"—that is, nasal catarrh, sore throat, or coughs—should be careful in the presence of others, and seek early medical attention and relief.

Handkerchiefs wet with discharges from the nose or throat should be disinfected by boiling in water.